

REMARKS

Status of the Claims

This application has been reviewed in light of the Office Action dated April 6, 2006. Claims 1-10, 12-21, and 30-33 are presented for examination. Claim 11 has been canceled, without prejudice or disclaimer of subject matter. Claim 33 has been added to provide Applicants with a more complete scope of protection. Claims 1, 7, 30-32 have been amended to define more clearly what Applicants regard as their invention. Claims 1, 31, and 32 are in independent form. Favorable reconsideration is requested.

Rejections Under 35 U.S.C. § 112

Claims 1-21, 30, and 31 have been rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The Office Action states that it is unclear how many first tread elements are claimed.

The claims have been carefully reviewed and amended as deemed necessary to ensure that they conform fully to the requirements of Section 112, second paragraph, with special attention to the points raised in paragraph 2 of the Office Action. Specifically, Claims 1 and 31 have been amended to recite “the at least one first tread element.” It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Rejections Under 35 U.S.C. § 103 Over “Brazil”

Claims 7-17 stand rejected under 35 U.S.C. § 103(a) as being obvious over Brazil 200002924 (“Brazil”) in view of JP 62-6802 (“Japan ‘802”), U.S. Patent No.

2,152,883 (“Eudy”), JP 6-171321 (“Japan ‘321”), JP 61-263807 (“Japan ‘807”), Japan 918 (JP 8-118918), or JP 8-118918 (“Japan ‘918”).

Dependent Claim 7, which has been amended to incorporate the subject matter of Claim 11, is directed to a tire, in which the first tread element, viewed at the surface of the tread, has a central zone surrounded by an encircling zone, the sensor being disposed so as to achieve a measurement in the central zone and being sensitive to at least one tangential force exerted at the surface of the central zone, wherein the central zone has a resistance to a force directed perpendicular to the surface of the tread which is less than the resistance to a force directed perpendicular to the surface of the tread offered by the encircling zone.

As the Office Action acknowledges, Brazil does not teach or suggest the claimed configuration in which measurements are made in a central zone surrounded by an encircling zone (see Office Action at bottom of page 3). Rather, Brazil discloses that grip measurements may be made using “one or more complete ribs 1, or one or more tread-pattern pads whose outer circumference has a radius R_s smaller than the radius R_a of the circumference of the ordinary ribs 2 or the adjacent ordinary pads.” (English Translation of Brazil at pages 4-5).

Nothing has been found or pointed out in Brazil that would teach or suggest a first tread element having a central zone surrounded by an encircling zone, in which the central zone has a resistance to a force directed perpendicular to the surface of the tread which is less than the resistance to a force directed perpendicular to the surface of the tread offered by the encircling zone, as recited in Claim 7.

The Examiner contends that one of ordinary skill in the art would have been motivated to combine the encircled tread elements of Japan '802 with Brazil's tire and also would have been motivated to modify these elements to include a tangential force measurement sensor. The rationale for this proposed combination and modification would be to improve the grip of Brazil's tire: "(1) Brazil teaches that the tire tread must have sufficient grip to avoid an accident in the case of insufficient grip and (2) each of the secondary references teach tread elements for improving the grip of the tread of a tire as desired by Brazil." (Office Action at page 12).

Assuming, *arguendo*, that one would have been motivated to make the hypothesized combination of the encircled tread elements of Japan '802 with Brazil's tire, for the purpose of improving grip, why would one have been motivated to modify the encircled tread elements to include measurement sensors? The goal of improving grip supposedly would be achieved by merely adding the encircled tread elements without modification. In this regard, the Examiner states that "Brazil suggests locating the sensor in a low height tread element." (Office Action at page 5). However, Brazil already discloses "low height" tread elements, such as sacrificed ribs or pads, that incorporate measurement sensors, so there would have been no reason to turn to Japan '802 for such elements. It is therefore respectfully submitted that the claimed invention would not have been achieved under the rationale offered by the Examiner. Furthermore, it is noted that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990))(emphasis in original).

Accordingly, Claim 7 is believed to be patentable over Brazil in view of the secondary references discussed above.

Rejections Under 35 U.S.C. § 102 Over “Winner”

Claims 1, 18-20, and 30-32 stand rejected under 35 U.S.C. § 102(b) as anticipated by DE 3939917 (“Winner”).

Winner relates to a tire having numerous measurement knobs of varying inclination. To estimate tangential force on the vehicle, detections from a number of such knobs are considered in combination. The sensing element in each knob element merely detects whether the corresponding knob is or is not slipping/sliding, which is a binary determination. An evaluation unit calculates the momentary friction between the tire and the rolling surface based on binary detections from multiple knobs.

By contrast, Claim 1 recites that the sensor in each first tread element produces a signal proportional to the tangential force acting upon that first tread element (see, e.g., Fig. 20 and paragraphs 129-131). Thus, the claimed arrangement, unlike Winner, allows the tangential force on the tire to be estimated from a measurement in a single element (although, as described in the specification, measurements from several elements may be used, if desired). Moreover, the use of a signal proportional to the tangential force allows calculations to be made using functions of the first tread element signal, such as the first derivative (see, e.g., paragraphs 100-107).

Accordingly, Claim 1 is believed to be patentable over Winner.

Rejections Under 35 U.S.C. § 102 Over “Breuer”

Claims 1, 6, 18-21, and 30-32 stand rejected as anticipated by DE 3937966 (“Breuer”).

Breuer relates to a system for determining the conditions of dynamic engagement between a vehicle tire and a roadway. The tire includes a sensor within a tread block or rib of the tread. The sensor detects the local stresses in circumferential, transverse and perpendicular directions as a point passes through the tire contact zone, as the tire rolls along the roadway.

Breuer does not teach or suggest first and second tread elements configured such that, at least under a first rolling condition, the contact surface of the at least one first tread element slides relative to the ground during its passage through the contact area, while the at least one second tread element does not slide under the first rolling condition, wherein an estimate of a tangential force on the vehicle is obtained based on the signal produced by the at least one first tread element, as recited in Claim 1.

Accordingly, Claim 1 is believed to be patentable over Breuer.

Rejections Under 35 U.S.C. § 103 Over “Breuer” In View of “Knill” or “Kukimoto”

Claims 1-6, 18-21, and 30-32 stand rejected under 35 U.S.C. § 103(a) as being obvious over Breuer in view of U.S. Patent No. 4,319,620 (“Knill”) and U.S. Patent No. 5,445,201 (“Kukimoto”).

Knill relates to a tire tread design aimed at improving rolling resistance, tread wear and traction, or wet skid resistance (see, *e.g.*, column 3, lines 1-3). While Knill discusses using different compositions for various portions of the tread, nothing has been

found or pointed out that teaches or suggests a tread design in which, at least under a first rolling condition, the contact surface of the at least one first tread element slides relative to the ground during its passage through the contact area, while the at least one second tread element does not slide under the first rolling condition, wherein an estimate of a tangential force on the vehicle is obtained based on the signal produced by the at least one first tread element, as recited in Claim 1.

As discussed above, Breuer also does not teach or suggest this feature. Thus, Knill does not remedy the shortcomings of Breuer, discussed above, with respect to the features recited in Claim 1.

Kukimoto relates to tread designs that seek to reduce uneven wear by employing different compositions in different portions of the tread. Again, nothing has been found or pointed out that teaches or suggests a tread design in which, at least under a first rolling condition, the contact surface of the at least one first tread element slides relative to the ground during its passage through the contact area, while the at least one second tread element does not slide under the first rolling condition, wherein an estimate of a tangential force on the vehicle is obtained based on the signal produced by the at least one first tread element, as recited in Claim 1. Thus, Kukimoto does not remedy the shortcomings of Breuer and Knill, discussed above, with respect to the features recited in Claim 1.

The Office Action suggests that the features discussed above are inherently disclosed, because the references disclose tread elements of different shapes and/or compositions. However, Applicants note that:

To establish inherency, the extrinsic evidence “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.”

M.P.E.P. § 2112 (quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)(citations omitted)).

In addition, Applicants would like to reiterate that, as discussed in the previous Amendment, the reasons laid out in the Office Action for combining these references (see Office Action at pages 9-10) are merely the supposed advantages of each of these references individually. Nothing in Breuer suggests the desirability of tread configurations such as those discussed in Knill or Kukimoto. Likewise, nothing in Knill or Kukimoto suggests the desirability of the sensors described in Breuer. Thus, nothing has been found in these references, or elsewhere in the prior art, that would suggest combining these references.

Accordingly, Claim 1 is believed to be patentable over Breuer in view of Knill or Kukimoto.

Claims 2-10, 12-21, and 30-33

Independent Claims 31 and 32 recite features similar to those discussed above with respect to Claim 1 and therefore are also believed to be patentable over the cited art for the reasons discussed above.

The other claims in this application depend from Claim 1, discussed above, and are therefore believed to be patentable for the same reasons. Since each dependent

claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

Conclusion

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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